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# FOREST CONTROL

by

# CONTINUOUS INVENTORY

"Today I have grown taller from walking with the trees."

...Karle Wilson

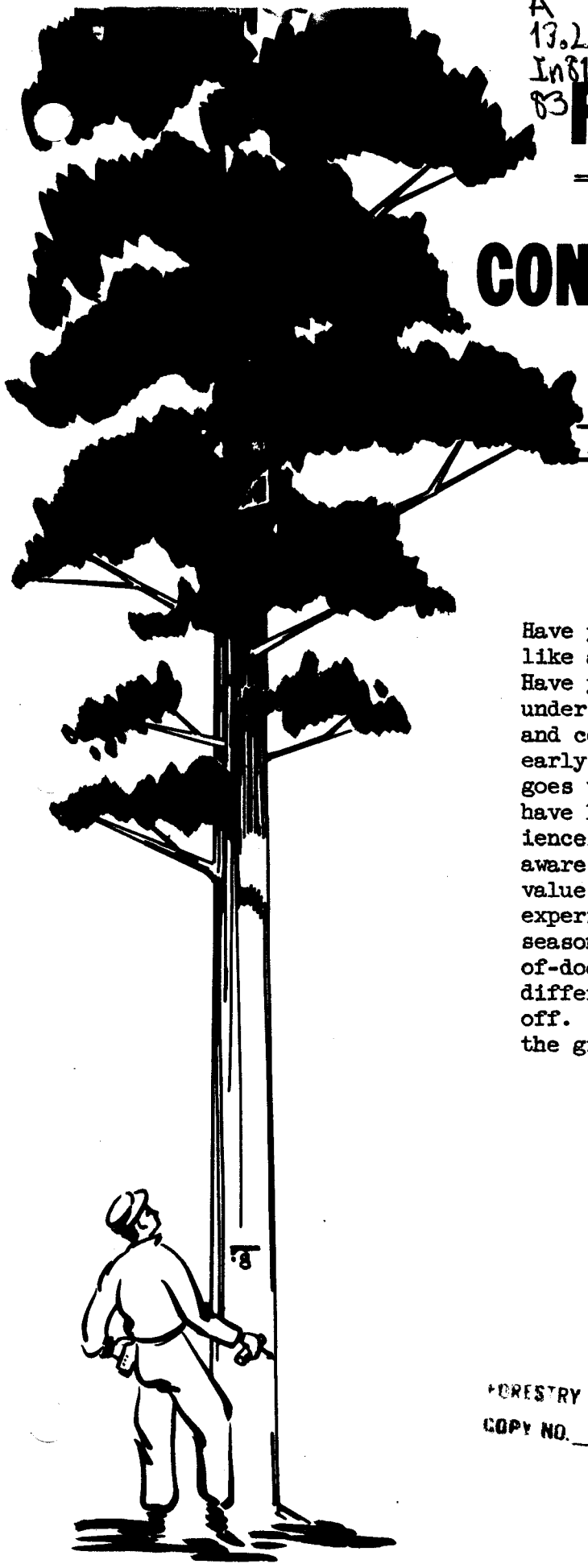
Milwaukee, Wis. February, 1961 No. 83

## TRANQUILITY

Have you ever stood alone in the cathedral-like atmosphere of a deep forest at sunset? Have you ever wakened from a night's sleep under a canopy of trees and, from the warmth and comfort of your bedroll, listened to the early morning sounds of a forest as it undergoes the transition from night to day? If you have known these or other meaningful experiences associated with outdoor life you are aware of the recreation - the "re-creative" - value inherent in a forest. Whether one is experiencing this for the first time or as a seasoned veteran who has lived with the out-of-doors a lifetime seems to make little difference. The magic influence never wears off. Because of this, recreation is one of the gifts - a resource - of our forests.

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## PROPOSAL FOR SIMPLIFIED CFI

### A Contribution to Silvical and Operational Improvement Planning

Foresters are constantly seeking better and more economic methods of forest management. Their worthwhile goals are maximum timber growth and forest improvement, coincident with continuously profitable timber operation. I wonder why we cannot concentrate on these features with our inventory work, and exclude a multitudinous miscellany of traditional side issues. Just as technical and economic factors, relating to the forest, constantly change, so also should the direction and intensity of forest inventory and management change.

Length of cutting cycle is a case in point. In Region 9 the long cutting cycle is no longer popular. Long intervals between cuts on the same area hobble and hold back forest cultural and operational improvement. The short cutting cycle in contrast, increases the rate of performance and advance in these fields, but it also calls for changes in other forest management activities. One of these changes is in timber cruising.

Forest inventory with short reappraisal periods is modeled to fit short cutting cycles. CFI is such an inventory technique. It gives the executive staff continuously fresh knowledge of the forest as a basis for constant improvement of management policies. CFI and the short cutting cycle, working together, have increased flexibility and intensity of management on private lands in Region 9, and they can do even better.

### SIMPLIFIED CFI PROPOSED

CFI has become quite standardized in the past 10 years of its application within Region 9. Its area classifications correspond closely to those of long time or ancestral origin. These do not fit our large areas of wild forest very well, and a change is proposed.

Continuous inventory control methods should simplify and consolidate the many segregations of traditional data. They should record more specific information on the physical condition of trees and stands. They should secure more facts helpful in the development of cutting plans and operating schedules. These qualifications, and simplicity and economy, are the thoughts behind a suggested, simplified CFI method for the small timber regions. The method can give new impetus to the isolation and solution of cultural and operational problems in the forest.

## CLASSICAL BREAKDOWNS OF THE FOREST COMBINED AND ABBREVIATED

Simplified CFI envisages no more than 6 area breaks with only 3 to 4 classes of productive forest in each. These include:

- 4 composite forest cover types
- 3 stand size classes
- 3 stand density classes
- 3 site qualities
- 3 stand operability classes
- 3 cutting period classes

Of these 6 breaks, cutting period, site quality and to a limited extent, operability are factors relating to the stand health or condition classification concept. They indicate the direction of the cut and facilitate the operating or timber production phases of forestry.

Cover type, size and density classes comprise the remaining area breaks. Cover type, in this proposal, combines forest habitats with a similarity of ecological and operating structure. They are:

1. Upland and lowland spruce and spruce-fir, northern white cedar and tamarack.
2. The aspens, Balm of Gilead and paper birch.
3. White, red and jack pines.
4. Northern and swamp hardwoods and oak-mixed hardwoods.

### TREE CONDITION CLASSIFICATION INTENSIFIED

Description of the trees within the plots is held to the minimum number of classes, but strong emphasis is given to tree condition or health qualifications. Dimensional and descriptive classes include:

Species	Vigor class
DBH	Tree status
Usable length	Management potential
Soundness	Mortality kind

### AMOUNT OF MEASURED SAMPLE REDUCED

The number of fixed radius sample plots needed for simplified CFI is reduced roughly 10 to 15 per cent. Two factors contribute to this economy:

1. Cover, size and density classes are reduced by half due to the suggested grouping. Other area breaks are also reduced in number.
2. Statistical accuracy standards are less restrictive for details which are not of immediate need in the management of the forest.

It is well to think of the accuracy of forest inventories in relation to the time when the collected information will be used. Volumes and areas not now commercial seldom need better than 30 to 40 per cent accuracy with a 95 per cent probability. Results of past inventories show that volumes on 1/4 to 1/3 of the total forest area, on any case or project, are of little current importance. They are not controlling, but only indicative factors. Furthermore, these data are subject to great and frequent changes before merchantability is reached. This limits their current value and permits lowered accuracy standards, but there are other volume and area records of much greater importance.

Calculated results for the first cutting cycle, the variable remeasurement intervals, and the first cutting period class demand above average accuracy standards in this modified CFI procedure. Operable pole and sawlog stands also are of significant importance, and call for results of sound significance, but many types and size classes are not this important.

It is possible that foresters are unduly emphasizing and over-refining limits of statistical accuracy for minor area breaks. This is not necessary in inventories which are frequently repeated and directly comparable. Information chiefly useful for long range planning permits lowered standards of statistical accuracy.

#### MANAGEMENT POTENTIAL CLASSIFICATION IMPORTANT

An important part of the proposed modification of CFI is George Semmens' MANAGEMENT POTENTIAL code. This tree classification gives direction to woods operations designed to reduce or eliminate poor growing stock from the forest. Its clear cut separation of cutting stock, growing stock and worthless trees, gives great encouragement to the retention of a strong, healthy residual stand. Four CFI projects have applied this new coding plan to more than 30,000 trees in the past year to furnish a most revealing picture of tree and stand condition.

#### SOME RESULTS OF THE USE OF MANAGEMENT POTENTIAL CODES

One of the season's CFI projects in the northern hardwood timber belt provides us with sample results of the application of MANAGEMENT POTENTIAL codes.

Recommended for cutting in the next five years, is 21% of the sawlog and 27% of the cordwood volume. Almost all of this wood is in low vigor, high risk trees. If these trees are carefully sought out and designated for cutting on the 11,448 acres of forest in cutting period 1, future yields and profits will increase.

The proposed cut of operable timber over a five-year period is at the rate of 4.2% per year for sawlogs and 5.4% for cordwood. For the first cutting period this annual harvest is very close to the anticipated growth percent for the forest, a figure which will be checked at remeasurement time in 1965. CFI results indicate a somewhat lower harvest during the second five-year cutting period.

## SUMMARY

The proposed, simplified CFI system is an abbreviated cruising process designed to guide the forester in the continuously profitable operation and constant improvement and reconstruction of his forest.

Recent evidence in Region 9 indicates increased flexibility and intensity of forest management on many large forest areas. Perhaps some of this may be credited to the impetus in cruising during the past 10 years. If this is the case, then the proposed simplified CFI should offer an even more direct incentive to forest improvement. It can speed up the collection, compilation, understanding and application of facts important to the reconstruction of woodland areas.

Simplified CFI concentrates on the measurement of forest condition and operability. It stresses a more economic correlation of statistical accuracy with the use and importance of the data collected. Continuing with the firm foundation of true and equal proportional sampling, and fixed radius plots, the new CFI offers what may well become a significant contribution to simplified inventory techniques. It proposes the use of MANAGEMENT POTENTIAL Codes to describe the silvical condition of each tree. Every company or State currently involved in CFI remeasurements might well include a trial run of the recommended group codes and MANAGEMENT POTENTIAL classes. The present generation of foresters in Region 9 will need little more than this, with some ground and aerial reconnaissance, to provide the maximum realistic operation and improvement of their forests, during their lifetimes.

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Standard codes for Simplified CFI  
are available on request to the  
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Milwaukee 3, Wisconsin